

What is claimed is:

1 A coated metal formed article, prepared by sequentially forming a zinc-containing porous coating layer, a phenol-modified silicon compound layer, and a fluorine resin-containing layer on the surface of a metal formed article, characterized in that

the fluorine resin-containing layer contains a fluorine resin as well as at least one organic resin selected from a polyester resin, a polyacryl resin, a polyolefin resin, a polyurethane resin, and a polycarbonate resin, where the amount of the fluorine resin added is in the range of 1 to 200 parts by weight with respect to 100 parts by weight of the organic resin.

2 A coated metal formed article, prepared by sequentially forming a zinc-containing porous coating layer, a phenol-modified silicon compound layer, and a fluorine resin-containing layer on the surface of a metal formed article, characterized in that

when the thickness of the phenol-modified silicon compound layer is t_2 (μm) and the thickness of the fluorine resin-containing layer is t_1 (μm), a ratio of t_1 to t_2 is in the range of 0.05 to 50.

3 The coated metal formed article as described in claim 1 or claim 2, wherein

when the thickness of the zinc-containing porous coating layer is t_3 (μm), a ratio of t_2 to t_3 is in the range of 0.06 to 10.

4 The coated metal formed article as described in one of claims 1 to 3, wherein

the thickness (t_1) of the fluorine resin-containing layer is in the range of 0.5 to 1,000 μm , the thickness (t_2) of the phenol-modified silicon compound layer is in the range of 1 to

100 μm , and the thickness (t_3) of the zinc-containing porous coating layer is in the range of 3 to 50 μm .

5 The coating metal formed article as claimed in one of claims 1 to 4, wherein

the phenol-modified silicon compound layer comprises a mixture or reactant of a silicon compound and a phenol compound, and the amount of the phenol compound added is in the range of 10 to 50 parts by weight with respect to 100 parts by weight of the silicon compound.

6 The coated metal formed article as described in one of claims 1 to 5, wherein

the fluorine resin-containing layer contains a lubricant agent, and the amount of the lubricant agent added is in the range of 1 to 30 parts by weight with respect to 100 parts by weight of the fluorine resin.

7 The coated metal formed article as described in one of claims 1 to 6, wherein

the fluorine resin-containing layer contains a coloring agent, and the amount of the coloring agent added is in the range of 1 to 30 parts by weight with respect to 100 parts by weight of the fluorine resin.

8 A method for forming a coated metal formed article, characterized by sequentially comprising the following steps (1) to (4):

(1) preparing step for a metal formed article;
(2) forming step for a zinc-containing porous layer using a thermal-spraying device;
(3) forming step for a phenol-modified silicon compound layer;

(4) forming step for a fluorine resin-containing layer that contains a fluorine resin as well as at least one organic resin selected from a polyester resin, a polyacryl resin, a

polyolefin resin, a polyurethane resin, and a polycarbonate resin, where the amount of the fluorine resin added is in the range of 1 to 200 parts by weight with respect to 100 parts by weight of the organic resin.